

# Medicine@Yale

Advancing Biomedical Science, Education and Health Care

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## A faster pipeline speeds new treatments from lab to patient

### *Small biotech with big ambitions hasten drug testing*

The flow of discoveries from the medical school's labs to patients in need is proceeding at a blistering pace—in the last four years, no fewer than five new therapies invented by School of Medicine researchers have advanced into human clinical trials. Yale's Of-

fice of Cooperative Research (OCR), which takes the lead in licensing the fruits of faculty labors to biotechnology and pharmaceutical companies, currently lists a dozen additional potential therapies under license and poised to start early stage clinical trials (see graphic, p. 6).

This unprecedented success in pushing investigators' finds out of the lab comes from OCR's strategy of partnering with up-and-coming biotech companies, and in some cases

catalyzing the creation of brand-new companies tailored to the needs of particular therapies.

The result has been a significant contraction of the time it takes to move new treatments from licensing to first trials in humans. For example, Proteolix, founded in 2003 to commercialize compounds discovered by Craig M. Crews, PH.D., associate professor of molecular, cellular and developmental biology and pharmacology, took just 18 months from its founding

to obtain Food and Drug Administration (FDA) approval to test one of Crews's cancer drugs in people.

Likewise, Achillion Pharmaceuticals, a start-up company whose first compound was discovered by Yung-Chi "Tommy" Cheng, PH.D., the Henry Bronson Professor of Pharmacology, began a Phase I trial of the drug to treat HIV/AIDS only a year and half after the company's inception.

**Pipeline, page 6**

## A love of Yale, a vision for its future

### *Unprecedented gifts provide funds for five professorships*

Having had a remarkably wide-ranging career during which he headed companies involved in everything from small aircraft to shipbuilding to cement, Greenwich, Conn., businessman and philanthropist David W. Wallace has some difficulty arriving at a term that neatly sums up his profession. But when pressed, he finally settles on "lucky."

In a stroke of good fortune for the School of Medicine, Wallace and his wife, Jean McLean Wallace, have donated \$6 million to endow two new professorships, adding to three professorships they have previously funded since 2000: the Jean McLean Wallace Professorship, held by Margaret K. Hostetter, M.D., professor and chair of the Department of Pediatrics; the Anita O'Keefe Young Professorship of Women's Health, held by Charles J. Lockwood, M.D., professor and chair of the Department of Obstetrics, Gynecology and



David and Jean McLean Wallace at their Greenwich, Conn., home with Dean Robert Alpern.

Reproductive Sciences; and the Robert R. Young Professorship, which is currently unfilled but has been designated for a faculty member involved in research in ophthalmology and visual science.

Largely unrestricted bequests to Yale from John William Sterling in 1920 and Eugene Higgins in 1975 have endowed 10 Sterling Professorships and four Higgins Professorships at the medical school. But the Wallaces' combined gifts, \$13.5 million specifically earmarked to support five professorships, are unprecedented at the School of Medicine.

"The funding of five professorships by a single donor is excep-

tional in magnitude and places the Wallaces in a small and select group of supporters of Yale School of Medicine," says Dean and Ensign Professor Robert J. Alpern, M.D. "Their gifts have allowed us to attract key faculty to Yale and will be instrumental in those faculty members' success."

Wallace has also been an important donor to his alma mater. Just prior to his 50th reunion, he and Jean gave a \$9 million gift for the renovation of Branford College, whose Gothic-style York Street wing is now called Wallace Hall. In all, the Wallaces have donated over \$30 million to Yale.

**Gifts, page 8**

## "Teacher's teacher" to oversee curriculum as education dean

In June, Associate Professor of Psychiatry Richard Belitsky, M.D., was named deputy dean for education at the medical school.

Belitsky, a popular and respected professor as well as a skilled clinician and administrator, is "a teacher's



Richard Belitsky

teacher and a doctor's doctor," Dean and Ensign Professor of Medicine Robert J. Alpern, M.D., said in announcing the appointment.

"He is an outstanding educator who has received many of the top teaching awards from Yale—one of them twice—and from his colleagues in psychiatry nationally," Alpern said. "He is also a highly effective administrator, adept at framing issues and working through them with colleagues in many departments, at conceiving and launching new programs, and at sorting and extracting the data needed for good decision making."

A native of Philadelphia, Belitsky received his bachelor's and medical degrees from the University of Florida. He came to Yale as a resident in 1979 and continued on as a fellow in forensic psychiatry until 1983.

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New Haven, CT 06511  
www.medicineat Yale.org

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When weighing treatment options, surgeons should look to trials, not tradition, says Yale's Larry Moss.

## Rebel with a cause

### *Pediatric surgeon backs science over subjectivity in the operating room*

Larry Moss, M.D., professor of surgery and chief of surgery at Yale-New Haven Children's Hospital, is a maverick among mavericks. Surgeons prize decisiveness and independence of mind, but Moss is out to transform the way his colleagues choose the procedures they use to treat sick children. Instead of relying largely on personal experience or custom, Moss wants pediatric surgeons to base clinical decisions on sound scientific studies of what works best.

This seems like common sense in an age when medical journals routinely publish clinical guidelines derived from large, rigorous drug trials. But according to Moss, surgery journals mostly report experience, not science.

"At surgical meetings, some very experienced surgeon whom everyone reveres will talk about his last 100 cases of some procedure, and say, 'I think you should do it this way, because that's how I do it, and I get good results.' And everyone will go home and do it that way," says Moss, who came to Yale from Stanford University School of Medicine four years ago. "Experience is a very important component of judgment, but you can't confuse experience, and its limitations, with real science."

To Moss's dismay, "real science" is scarce in his field. When he and colleagues reviewed over 80,000 studies in pediatric surgery published from 1966 to 1999, they found only 134 randomized controlled trials. As reported in 2001 in the *Journal of Pediatric Surgery*, only 16 of these trials compared two procedures, and most were poorly designed.

Moss's campaign for evidence-based surgery arose from his own uncertainty about treating perforating necrotizing enterocolitis (NEC), an inflammation of the gastrointestinal tract that affects roughly one in 20 premature babies. If the disease progresses to the point that intestinal tissue dies and perforates, between a quarter and a half of these children die from overwhelming bacterial infections. For 30 years, surgeons debated the relative merits of two treatments—removing infected and dead tissue versus inserting a drain to clear stool and pus—but no researcher had ever done a controlled study to find out which approach saves more lives.

"I read everything published on the subject and realized that there was no scientific evidence to tell us what to do, and if there was going to be any, I'd better generate it," Moss says. So six years ago, while still at Stanford, Moss launched a

15-center study comparing the two options. The May 25 issue of the *New England Journal of Medicine* reported the results: the two procedures have virtually the same survival rate, about 65 percent.

The research shows that investing time and resources to develop better operations for perforated NEC is probably not worthwhile, says Moss. "Once the illness has reached perforation, the die is cast. We need to redirect our energies into identifying which infants will develop perforation and target this group with new therapies." With a \$1 million grant from the Glaser Pediatric Research Network funded by the Gerber Foundation, Moss has begun a six-center study to do just that.

But as the first randomized and controlled multi-center trial comparing pediatric surgical procedures, the new study established the more fundamental point that surgeons, like other physicians, can and should test their strategies in clinical trials, Moss says.

Moss surmises that his nonconformist streak stems from his study of literature as a Stanford undergraduate. "If you're immersed in the culture of surgery, it can be difficult to stick your head out of the sand and say, 'Wait a minute, this whole field is looking at things the wrong way,'" he says. "Literature helps you look at what you do in your daily life in a broader perspective."

**Lifelines**  
**Larry Moss**

## Yale biochemist is elected to the world's oldest scientific society

Nigel D.F. Grindley, PH.D., professor and former chair of molecular biophysics and biochemistry at Yale, was elected a fellow of the Royal Society in May. In naming Grindley one of its 44 new fellows for 2006, the Society called his studies on site-specific recombination a "landmark in the field [that] have paved the way for further fundamental discoveries."

Grindley does research on enzymes that break apart and stitch together strands of DNA when genes are rearranged. In collaboration with his wife, senior research scientist Catherine M. Joyce, D.PHIL., he has also



**Nigel Grindley**

carried out studies of DNA polymerase, an enzyme involved in DNA replication.

Grindley received his undergraduate degree at Cambridge University and his PH.D. at the University of London. He was a NATO Postdoctoral Fellow at Carnegie-Mellon University in 1974 and at Yale from 1975 to 1978. He returned to Yale in 1980 after serving as an assistant professor at the University of Pittsburgh. He was the

winner of a Guggenheim Fellowship in 1978 and a MERIT award from the National Institutes of Health in 1991.

Founded in England in 1660 by Christopher Wren, Robert Boyle and other luminaries, the Royal Society is the world's oldest scientific academy in continuous existence. More than 60 Nobel laureates are among the 1,400 fellows and foreign members on the Society's roster, which through its history has included Isaac Newton, Benjamin Franklin, Charles Darwin, Ernest Rutherford, Albert Einstein, Dorothy Hodgkin, Francis Crick, James Watson and Stephen Hawking.

## Superb teaching is rewarded at graduation

Students weren't the only ones celebrating when the School of Medicine held its Commencement ceremonies on Harkness Lawn last May. Many of their mentors were also given recognition as great educators.

Professor of Medicine Herbert S. Chase Jr., M.D., who left the School of Medicine at the end of June after shaping the medical school's curriculum for six years as deputy dean for education, received an especially fitting tribute when he was awarded the Bohmfalk Prize for basic science education. Andre N. Sofair, M.D., M.P.H., assistant professor of medicine, won the Bohmfalk Prize for clinical teaching.

Mark D. Siegel, M.D., associate professor of medicine, won the Leonard Tow Humanism in Medicine Award.

Two people won the Leah M. Lowenstein Award for promoting humane and egalitarian medical education: Nancy R. Angoff, M.P.H., M.D., associate dean for student affairs, and, for the second year, Catherine Chiles, M.D., associate clinical professor of psychiatry.

The Francis Gilman Blake Award for outstanding teaching of the medical sciences went to Interim Chair of Internal Medicine David L. Coleman, M.D., and the Betsy Winters House Staff Award went to Robert W. Chang, M.D., chief surgical resident. Professor of Internal Medicine Fred S. Gorelick, M.D., received the Alvan R. Feinstein Award for an outstanding teacher of clinical skills.

### Medicine@Yale

Peter Farley, *Managing Editor*

**Contributors:** Amy Chow, Janet Emanuel, Michael Fitzsosa, Pat McCaffrey, Kara Nyberg, Karen Peart, Cathy Shufro, Jacqueline Weaver

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Telephone: (203) 785-5824

Fax: (203) 785-4327

E-mail: [medicine@yale.edu](mailto:medicine@yale.edu)

Website: [medicineatyale.org](http://medicineatyale.org)

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#### Yale School of Medicine

Robert J. Alpern, M.D., *Dean*  
*Ensign Professor of Medicine*

Mary Hu  
*Director of Planning and Communications*

Michael Fitzsosa  
*Director of Publications*

Correction: Two medical school students who appeared in a photograph accompanying an article in our May/June issue on the HAVEN free clinic were identified incorrectly. The students pictured were Erica Mintzer and Susan Mathai of the Class of 2009.



## Advances

Health and science news from Yale



### Trading life and limb in pursuit of being thin

Considering the social stigma and adverse health effects, most people would never choose to be obese. But just how far would people go to avoid being fat?

Marlene B. Schwartz, Ph.D., director of research and school programs at Yale's Rudd Center for Food Policy and Obesity, and colleagues polled nearly 4,300 individuals across the weight spectrum—from underweight to extremely obese—and asked what they would sacrifice to not be fat.

As reported in the March issue of *Obesity*, 46 percent of the respondents said they would give up a year of life, 30 percent would divorce their spouse, and 25 percent would forego bearing children. Some went further: 5 percent reported that they would prefer to lose a limb and 4 percent said they would rather be blind than obese.

The researchers found anti-fat bias in all respondents, even those who are obese. "The fact that even obese individuals exhibited a significant implicit anti-fat bias suggests that they have internalized negative stereotypes, such as believing they are lazy," says Schwartz, who adds that such stereotypes may undermine people's motivation to make healthy behavior changes.

### How immunity is MIFed by malaria

Half of the 2 million deaths from malaria each year result from severe anemia caused by the duplicitous *Plasmodium* parasite, which not only destroys healthy red blood cells, but also blocks the production of new cells to replace them. New research shows *Plasmodium* adds insult to injury in accomplishing this latter task by turning the immune system against itself.

Richard Bucala, M.D., Ph.D., professor of medicine and pathology, and collaborators discovered that the macrophage migration inhibitory factor (MIF), a key immune system protein that is often expressed at high levels during malarial infection, suppresses red blood cell production. Mice lacking the MIF gene were better at regenerating red blood cells after malarial infection, thereby curbing the severity of anemia and boosting their chance for survival.

Bucala's group identified subtle variants of the human MIF gene that lead to low or high MIF levels during *Plasmodium* infection. The research, published in the May issue of the *Journal of Experimental Medicine*, points the way to a genetic test that could identify individuals prone to severe malarial anemia.

# New protein chips are a window on the womb

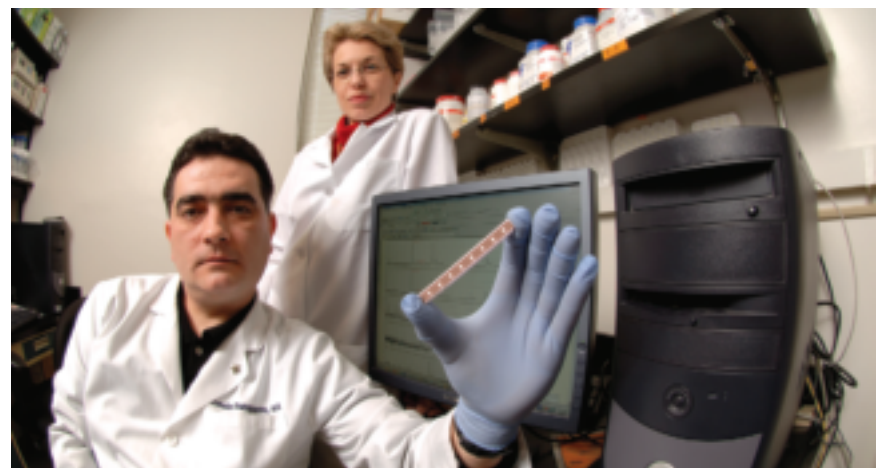
## A rapid, reliable test to make preterm births safer for mother and child

Preterm birth is the leading cause of death and disease in newborns worldwide, but it is difficult to prevent or to manage because premature labor can result from several causes, including infection and intrauterine inflammation. It is well known that inflammation is damaging to babies, but inflammation itself has many causes. Sometimes infection leads to inflammation, but as often as not, other biological processes are at work.

Because of this complexity, obstetricians treating mothers at risk for preterm birth must decide within a brief time window whether to prescribe anti-inflammatory agents, antibiotics or both, while they simultaneously weigh whether aiming for a quick delivery or slowing down labor with drugs will be better for the baby. Physicians find their way through this clinical thicket by counting white blood cells (WBCs) in a sample of amniotic fluid or culturing a sample. However, these tests take time, and they provide a crude and unreliable measure of inflammation.

But new work using cutting-edge protein-chip technology by the husband-and-wife research team of Catalin S. Buhimschi, M.D., and Irina Buhimschi, M.D., both assistant professors in the Department of Obstetrics, Gynecology and Reproductive Sciences, may soon make doctors' decisions surrounding preterm birth faster, easier and healthier for both mother and child.

Irina Buhimschi says that relying on WBC counts or cultures to manage premature labor allows for "educated guesses" at best, and in 2000 she began exploring the newly emerging field of proteomics—the study of the structure and function of proteins—to find a better way. She settled on a technique known as SELDI (surface-enhanced laser desorption ionization), in which a biological sample, such as amniotic fluid, is placed on a small aluminum strip coated with chemicals that bind proteins (see photo). The strip is then inserted into equipment



Catalin and Irina Buhimschi have designed a protein chip that is providing new insights into preterm labor and other complications of pregnancy.

that determines which proteins in the sample are most abundant and rapidly generates a protein profile, a graph in which the most plentiful proteins are represented as peaks.

The Buhimschis put SELDI technology to use in a study reported in the February 2005 issue of *BJOG*, a British journal of obstetrics and gynecology, in which they analyzed samples of amniotic fluid that had been obtained during the 1990s from 77 women with symptoms of preterm labor and placed in cold storage. Seventeen of these patients, called the "normal group" in the study, had low WBC counts and normal culture results when the samples were drawn, and these women eventually had normal deliveries. Sixty other women had preterm deliveries, but in a vivid illustration of the complexity of premature labor, only 21 (the "disease group") had high WBC counts and cultures indicating infection; the remainder had low levels of WBCs and negative cultures, or had inconclusive test results—negative on one and positive on the other.

When the Buhimschis applied a statistical technique known as mass restricted (MR) analysis to the disease group's SELDI-derived protein profiles, four peaks emerged that were not present in the normal group. To test whether these proteins, all of which are involved in inflammatory pathways, could serve as reliable biomarkers to manage preterm labor, the researchers devised an "MR score," assigning one point for the presence of any of the peaks in a sample. They

then scored 24 additional amniotic samples, this time without knowing what the patient's outcome had been, and found that the MR score predicted with great accuracy which women had preterm births, and what the nature of their test results had been.

In a more recent study, presented at the February meeting of the Society for Maternal-Fetal Medicine, the Buhimschis tested fresh samples of amniotic fluid taken from women with symptoms of preterm labor and found that their MR scores not only predicted preterm births but when those births would occur. "An MR score of 2 indicates the median time for delivery is four days," says Catalin Buhimschi. "If all four biomarkers for inflammation are present, delivery occurs within hours. Our test has more clinical value because we can obtain results in half an hour."

The Buhimschis hope this latest work, which won the 2006 March of Dimes Award for Best Research in Prematurity, will add momentum to their efforts to move their technique into clinical practice, and they are now exploring the use of SELDI for the diagnosis and management of other prenatal conditions, such as preeclampsia.

In a scientific bonus, one of the proteins the Buhimschis identified with SELDI has never been associated with preterm inflammation. "In addition to its diagnostic power," Catalin Buhimschi says, "SELDI also opens the window for new studies to understand the biology of the process of inflammation."

## Expert on autism is named new director of Child Study Center

Fred R. Volkmar, M.D., a longtime Yale faculty member and world authority in the diagnosis and treatment of autism, has been named director of the medical school's Child Study Center (CSC) and chief of the Department of Child Psychiatry at Yale-New Haven Hospital for a three-year term.

The CSC is an internationally known research and treatment facility for children's mental health with acclaimed programs in early childhood development, trauma, Tourette syndrome, obsessive-compulsive disorder, mental retardation, autism and other developmental disorders.

Volkmar, the Irving B. Harris Professor in the Child Study Center and professor of psychiatry, pediat-

rics and psychology, came to Yale as a fellow in 1980 and joined the medical school faculty two years later. At the CSC, Volkmar directs an autism clinic that attracts patients from all over the world and conducts cutting-edge research on the basic biology of autism and its diagnosis and treatment.

An editor of the *Handbook of Autism and Pervasive Developmental Disorders*, Volkmar was the primary author of the autism section in the latest edition of the *Diagnostic and Statistical Manual of Mental Disorders*, the standard guide to psychiatric diagnosis. In 2007, he will become editor of the *Journal of Autism and Developmental Disorders*, the field's oldest academic journal. As a member



Fred Volkmar

of the National Research Council's Committee on Educational Interventions for Children With Autism, Volkmar made major contributions to

the U.S. Department of Education's 2001 report *Educating Children with Autism*, which documented the effectiveness of early intervention programs.

Volkmar succeeds Alan E. Kazdin, Ph.D., who has served as CSC director since 2002. Kazdin has returned to teaching and research as a professor in the Department of Psychology at Yale.



## Out & about



February 17: At a reception for the **OPENING OF THE TAC GALLERY** (see *An Eye for Science*, p. 7) researchers saw their scientific images displayed as art. **1. Lorraine F. Roseman**, operations manager and customer advocate at the School of Medicine's Office of Facilities, with **Eric Uscinski**, director of Facilities Operations. **2. Ann M. Haberman**, PH.D., associate research scientist in the Department of Laboratory Medicine. **3. Ruth R. Montgomery**, PH.D., senior research scientist in the Department of Medicine, with **Cécile M. Chalouni**, PH.D., associate research scientist in the Department of Cell Biology. **4. Valeswara-Rao Gazula**, PH.D., associate research scientist in the Department of Pharmacology, and **Sudhakar Ravuri**, PH.D., of the medical school's W.M. Keck Foundation Biotechnology Resource Laboratory.

March 20: The Medical Historical Library of the Harvey Cushing/John Hay Whitney Medical Library was the setting for the presentation of the medical school's **CLASS OF 2006 GIFT**, a \$6,000 donation to the Yale School of Medicine Annual Fund's Society of Distinguished Teachers (SDT). The SDT was formed "to honor, preserve and enhance the legacy of medical education" at the School of Medicine. Seated: **Marcus Coe** (left) and **Josh Shofner**, co-presidents of the class, presented the gift to (standing, from left) **G. Eric Schonewald** of the medical school's Office of Development, and **Frank J. Bia**, M.D., director of the SDT and professor of medicine and laboratory medicine.



April 30: Students and faculty went head-to-head at the **DEAN'S TEAM SOFTBALL CHALLENGE**, an annual event hosted by Dean and Ensign Professor of Medicine **Robert J. Alpern**, M.D. At the medical school's 2005 Hunger and Homelessness Auction, a bidding competition among students led by **Misaki Kiguchi** won the privilege of competing against "Bob's Bulldogs." Back row, from left: **David L. Coleman**, M.D., **Mark McRae**, **Gabriel Widi**, Misaki Kiguchi, **Kaoru Kiguchi**, **Karl Laskowski**, **Maulik Shah**, **Peter Juran**, **Joshua Shofner**, **Scott Kennedy**, **Matthew McRae**, and **Ryan Kaple**. Front row, from left: **David L. Rimm**, M.D., PH.D., **Sam Glazer**, **Peter M. Glazer**, M.D., PH.D., **Dennis L. Cooper**, M.D., Alpern, **Barbara Watts**, **Diane Kowalski**, M.D., **Jon S. Morrow**, M.D., PH.D., **Maritza Martel**, M.D., **James S. Duncan**, PH.D. Not pictured: **Caryn St. Clair**, **Richard Silverman**. (Silverman, the School of Medicine's director of admissions and Bulldogs pitcher, lost a towering pop fly in the sun and left the game early to have his lip stitched up. Rimm injured his Achilles tendon, and Coleman tore a hamstring.)



May 4: A reception for attendees of the inaugural **KAVLI SYMPOSIUM**, dedicated to the memory of the late Patricia S.



**Goldman-Rakic**, PH.D., was held at the New Haven home of **Pasko Rakic**, M.D., PH.D., chair and Dorys McConnell Duberg Professor of Neurobiology and director of the Kavli Institute for Neuroscience. **1.** From left: Keynote speaker **Thomas R. Insel**, M.D., director of the National Institute of Mental Health, Rakic and **Arvid Carlsson**, M.L., M.D., a winner of the Nobel Prize in physiology or medicine in 2000. **2. Amy F.T. Arnsten**, PH.D., professor of neurobiology, with colleague **Gordon M. Shepherd**, M.D., PH.D., professor of neurobiology. **3. Paul Greengard**, PH.D., of Rockefeller University. Greengard shared the 2000 Nobel Prize with Carlsson and with another Kavli Symposium keynote speaker, **Eric R. Kandel**, M.D., of Columbia University. **4.** From left: **Helen Barbas**, PH.D., of Boston University, **Michael Petrides**, PH.D., of McGill University and **Joaquin Fuster**, M.D., PH.D., of the University of California, Los Angeles. **5.** From left: **Wen-Jun Gao**, M.D., PH.D., of Drexel University, **Clare M. Bergson**, PH.D., of the Medical College of Georgia, and **Nenad Sestan**, M.D., PH.D., assistant professor of neurobiology.



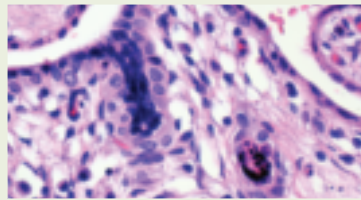
May 15: A reception followed the inaugural lecture sponsored by **THE GILBERT H. GLASER, M.D., FUND FOR RESEARCH AND EDUCATION IN NEUROLOGY**. Glaser, professor emeritus of neurology, was instrumental in establishing neurology as a medical specialty. **1.** At a plaque presentation commemorating the establishment of the fund were (from left) **Timothy Pedley**, M.D., the Henry and Lucy Moses Professor and chair of the Department of Neurology at the Columbia University College of Physicians and Surgeons, who delivered the lecture, **Morfydd Glaser**, **Gareth Glaser**, **Sarah Glaser**, **Barbara Glaser** and **Stephen G. Waxman**, M.D., PH.D., Bridget Marie Flaherty Professor of Molecular Neurology and chair of the Department of Neurology. **2. Gilbert Glaser** with **Frank Esposito**, former instrumentation specialist for the Department of Neurology.





## Advances

Health and science news from Yale



### Placenta may hold autism's earliest mark

Autism, a complex disability affecting social interaction and communication skills, typically emerges in children between 1 and 3 years of age. But autism is a so-called spectrum disorder—symptoms vary widely across individuals in both degree and kind. Early diagnosis is therefore challenging, yet critical for initiating specialized intervention programs, which have the greatest impact if begun as soon as possible.

A new study by Harvey J. Kliman, M.D., PH.D., research scientist in the Department of Obstetrics, Gynecology and Reproductive Sciences, may make it possible to diagnose autism at birth. The research, conducted with research scientist George M. Anderson, PH.D., and colleagues at the Yale Child Study Center and published in the June 22 issue of *Biological Psychiatry*, shows that abnormal foldings known as trophoblast inclusions (dark purple area, center left; dark oval, lower right) appear three times more frequently in placentas of autistic children than in placentas of normal individuals.

Further studies based on these findings will seek to understand the relationship between placental abnormalities, brain development and the incidence of autism.

### Curbing the scourge of deadly diarrhea

The human body favors balance. Too much of one thing or too little of another often tips the scales toward ill effects. So it is with the devastating diarrhea seen in *V. cholera* and *E. coli* infection. Toxins produced by these bacteria force cells in the intestine to secrete water and salts at rates faster than the cells can reabsorb them, leading to severe dehydration that kills millions of children each year.

In the June 20 issue of *Proceedings of the National Academy of Sciences*, John P. Geibel, M.D., professor of surgery, Steven C. Hebert, M.D., C.N.H. Long Professor and chair of the Department of Cellular and Molecular Physiology, and colleagues report that switching on a specific calcium-sensing receptor protein on the surface of intestinal cells with a jolt of calcium or with agents that modulate the receptor blocks fluid loss and enhances absorption.

According to Geibel and Hebert, stimulating the receptor destroys cellular signaling molecules triggered by bacterial toxins, and “development of specific agents to target this intestinal receptor could provide a new approach for treating life-threatening diarrhea.”

# Biology, medicine unite in new grad initiative

## Program will infuse graduate training with medical import

Biology and medicine have been tightly intertwined since antiquity, but the bond between the two has loosened over the past few decades. With the rise of molecular biology and the more recent advent of the post-genomic era, the life sciences have become increasingly complex and specialized. It can be daunting for biologists to stay abreast of developments in their own specialized realms, let alone keep track of trends in medicine. At the same time, increasing clinical demands and the need to master ever-changing medical technology have placed limits on doctors' ability to keep up with the rapid pace of advances in basic biology.

Nonetheless, many students entering graduate programs in basic biological disciplines are primarily motivated by a deep desire to improve human health. To help bridge the gap between biological and medical training, Yale's Combined Program in Biological and Biomedical Sciences (BBS) has launched the Medical Research Scholars Program (MRSP), a new initiative aimed at helping graduate students in the life sciences embark on careers devoted to medically relevant research.

“As training in biology has become more specialized, it has gotten further away from clinical applications,” says BBS Director Lynn Cooley, PH.D., professor of genetics, cell biology and molecular, cellular and developmental biology, who will act as MRSP co-director along with Michael J. Caplan, M.D., PH.D., professor of cellular and molecular physiology and cell biology, and Joseph E. Craft, M.D., professor of medicine and immunobiology. “The goal of this new program is to bring medical training to graduate students learning basic science, including exposure to patients who are dealing with diseases or disease treatments. The hope is that this will inspire the students to direct their



John Alvaro and Lynn Cooley are launching a new program to give graduate students in biology a broad exposure to medicine.

basic research projects toward the goal of helping those people,” Cooley says.

The MRSP has been given a head start with an \$800,000 grant from the “Med Into Grad” initiative of the Howard Hughes Medical Institute (HHMI), an effort to increase understanding of medical issues among researchers working toward the PH.D. degree in biological science. The MRSP program will enroll eight to 10 students per year—half first-year and half second-year students—in clinically oriented coursework and “mentored clinical experiences,” during which they will interact with patients under the guidance of physician-scientist faculty members who actively treat patients while carrying out basic research on the biology of human disease.

OrLando Yarborough, a graduate student in genetics with a research interest in hypertension, says that he has carefully chosen courses, mentors and laboratory rotations to complement his clinical interest.

But Yarborough, who is beginning his fourth year at Yale, worries that his and other graduate students' experience with patients and medically relevant courses is often a matter of “happenstance,” and he welcomes the new program's more formal route to medical enrichment of the curriculum. “Even though I'm as close as

I possibly can get to clinical relevance, the exposure is not directed,” Yarborough says. “The strength of this program is the intention from the outset to strategically expose and train PH.D. students in clinical pathology and patient interaction.”

One possible benefit of programs like the MRSP will be a quicker translation of discoveries in basic biology labs to useful treatments for patients, says John D. Alvaro, PH.D., lecturer in psychiatry and administrative director of BBS. “Scientists are not trained to know all the ramifications of their own discoveries, or to be able to move them forward,” Alvaro says. “Bridging basic science and medicine is one way to change this.”

Students have greeted the MRSP initiative with enthusiasm. Out of 102 new students entering the BBS program in the fall, 27 applied for the MRSP; in the current first-year class of 78, 13 applied. “This response is a great indication that the program is hitting a chord and providing an opportunity that is quite timely,” says Cooley.

When the MRSP's first 10 students enter the program this fall, they will face some familiar challenges as they tackle courses in physiology and cell biology. But they will also have the unusual opportunity to meet patients who may one day benefit from their discoveries. “Students may be inspired by this kind of experience in terms of what kinds of projects they choose to work on,” says Cooley, “based on knowledge not just of disease mechanisms, but of people who have those diseases.”

Khalid Fakhro, a second-year student who works alongside Yarborough in the laboratory of Richard P. Lifton, M.D., PH.D., chair and Sterling Professor of Genetics, is in the first cadre of MRSP students. “Now more than ever, it is imperative to be trained both in the clinical field and the rigor of scientific research,” says Fakhro. “I'm very proud and happy to be part of the group of students who will receive this once-in-a-lifetime opportunity.”

## Blood cell researcher is named new chair of Laboratory Medicine

Brian R. Smith, M.D., a physician-scientist who joined the Yale faculty in 1989, has been named chair of the Department of Laboratory Medicine and chief of laboratory medicine at Yale-New Haven Hospital for a three-year term that began on July 1.

Members of the Department of Laboratory Medicine study the molecular and cellular constituents of blood and other body fluids to improve the diagnosis and treatment of disease, and to gain further insights into the causes of disease. The department also oversees the School of Medicine's clinical laboratories, in which nearly five million tests are performed each year for Yale-New Haven Hospital and other national and regional health care centers. The faculty also teach the core courses in

laboratory medicine and microbiology taught to medical students.

Smith, professor of laboratory medicine, medicine and pediatrics, received his medical degree from Harvard Medical School and completed his internship and residency in internal medicine at the Peter Bent Brigham Hospital. He completed fellowships in hematology, oncology and research pathology at the Brigham, the Dana-Farber Cancer Institute and Children's Hospital in Boston. He has served as vice chair of the Department of Laboratory Medicine since 1997.

Smith's research has focused on how blood platelets and white blood cells, which adhere to one another during inflammation and blood coagulation, interact in health and disease. In approximately 150 journal articles



Brian Smith

he has explored how the combined actions of these cells may contribute to disorders of the blood and cardiovascular system, metastatic cancer, and complications of blood transfusion and circulatory bypass during cardiac surgery.

Smith succeeds Peter I. Jatlow, M.D., professor of laboratory medicine and psychiatry, who has headed the department since 1984. During Jatlow's tenure, the department's research funding increased almost 20-fold. Jatlow, an expert on drugs of abuse, will continue to direct the department's clinical chemistry laboratory.

In addition, Applied Spine Technologies, another young company, is poised to begin human trials of the M-Brace, an implantable device invented by Manohar M. Panjabi, PH.D., DR.TECH., professor of orthopaedics and rehabilitation. The M-Brace stabilizes the spine to relieve chronic low-back pain.

Because start-ups can garner venture capital based on a few promising clinical candidates or an exciting technology, small biotechs are driving the most focused and aggressive development of new treatments, says Jon Soderstrom, PH.D., managing director of OCR. “We know that the most important thing we can be doing in medicine right now is developing new therapies,” Soderstrom says. “What we’re seeing is that the time frame that a biotech takes to do that is running about half of what we see in the traditional pharmaceutical industry.”

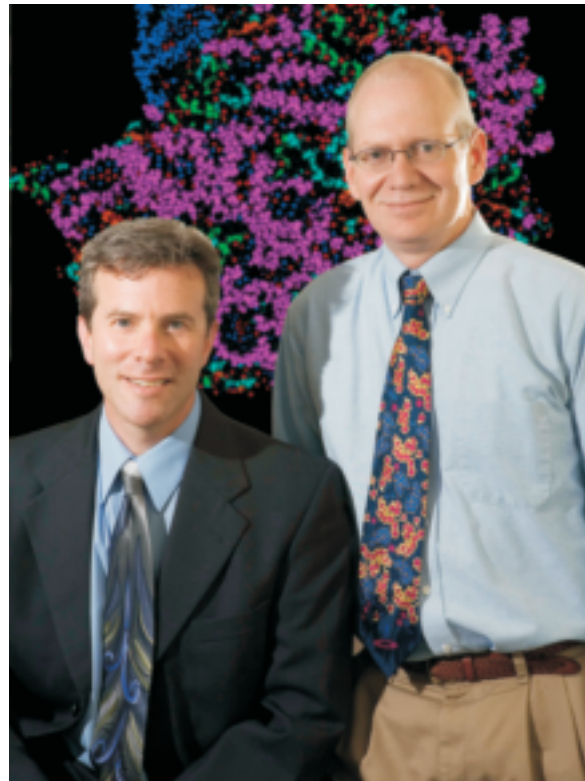
The intense focus of small biotechs on just a few compounds benefits academic researchers looking to quickly translate their work to new medicines, says John W. Puziss, PH.D., OCR’s director of technology licensing. “When we license a compound or technology to a start-up, that company raises tens of millions of dollars committed to taking that compound to market,” says Puziss. “Where big pharma might take 5 years to get an invention into the clinic, investors in

small companies want to see results in 2 years.”

If a biotech’s drug is promising in early-stage clinical trials, rights to the drug—and sometimes the entire biotech company—may be acquired by a traditional “big pharma” firm. Such acquisitions fill out big companies’ research and development pipelines, but the bigger firms’ greater expertise in manufacturing, marketing and distribution also ensure that useful drugs will reach the doctors and patients who need them.

Yale picked up on this drug-development trend early on, says Paul R. Pescatello, J.D., PH.D., president and CEO of New Haven-based bioscience advocacy group CURE (Connecticut United for Research Excellence). “Historically, Yale worked well with big pharma, and OCR understood pretty quickly that the more little companies they could seed, the more they’d increase the odds of the research being picked up by big pharma to be developed and ultimately marketed.”

A bonus for New Haven is the fact that most of the new companies licensing Yale discoveries are local, a big plus for the area’s economy. By bringing together scientists with entrepreneurs and venture capitalists, OCR has helped launch 30 or so companies that form the core of New Haven’s biotech cluster, and most of the 49 biotechnology companies now



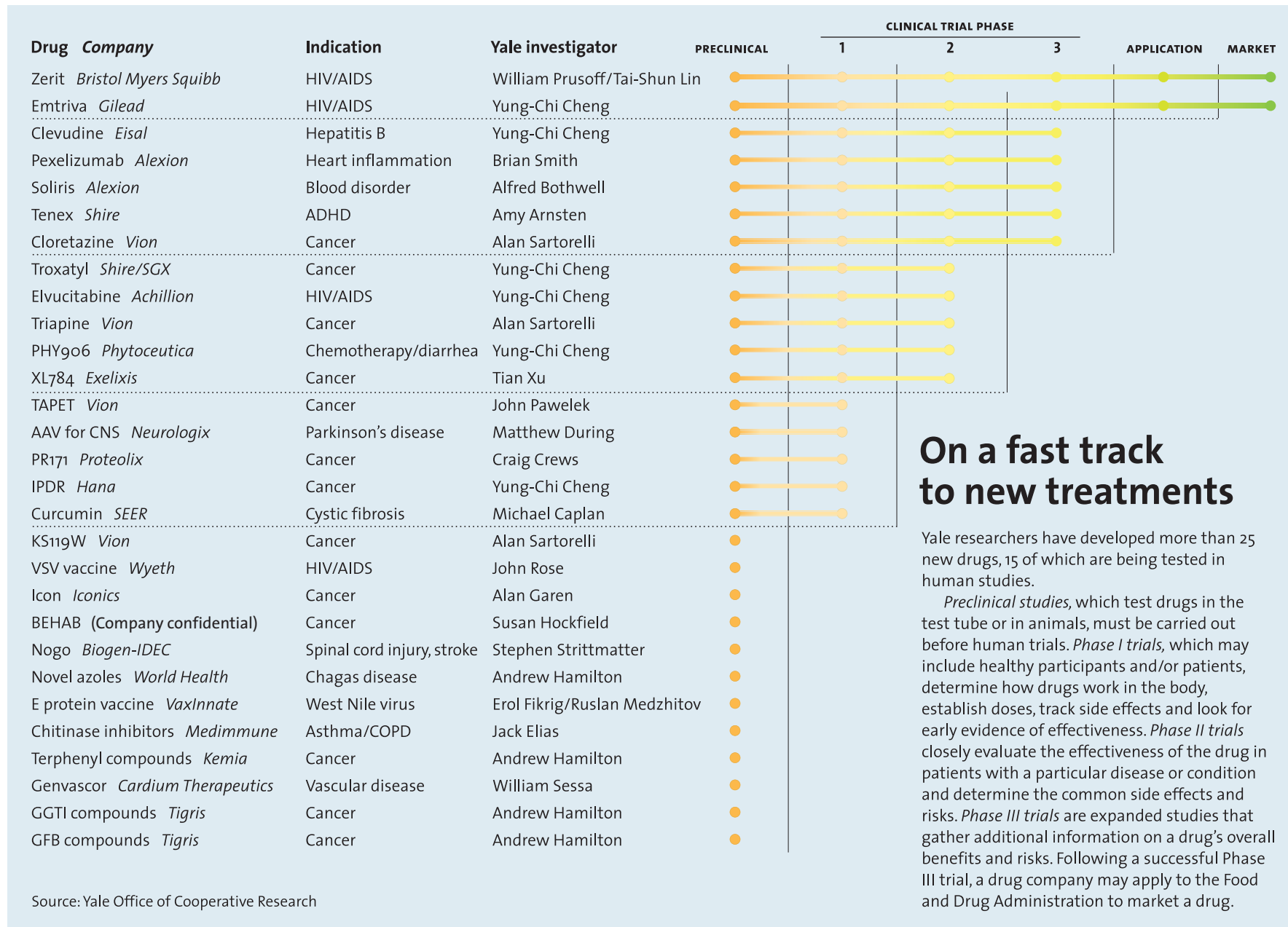
John Puziss (left) and Jon Soderstrom (right) of Yale’s Office of Cooperative Research say that a new paradigm of drug development is moving treatments faster from labs to patients.

doing business in Connecticut have their roots in Yale research.

Yale’s success story starts with the impressive research of its faculty, OCR’s Puziss is quick to point out. And their efforts have been rewarded—royalties from the HIV/AIDS drug Zerit, the brainchild of William H. Prusoff, PH.D., professor emeritus and senior research scientist in the Department of Pharmacology (see re-

lated story, p. 8), provided the bulk of the funds to build the Anlyan Center, the medical school’s main research facility, completed in 2003.

But money isn’t the main point of OCR’s efforts, Puziss emphasizes. “There are a number of examples in our pipeline now entering the clinic that could very well reach the marketplace—and save lives,” he says. “That’s what we’re all about.”



## On a fast track to new treatments

Yale researchers have developed more than 25 new drugs, 15 of which are being tested in human studies.

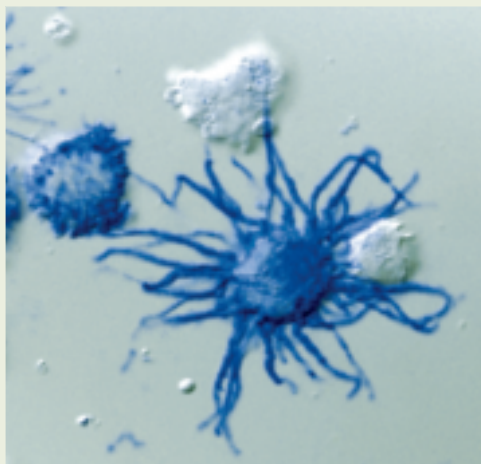
*Preclinical studies*, which test drugs in the test tube or in animals, must be carried out before human trials. *Phase I trials*, which may include healthy participants and/or patients, determine how drugs work in the body, establish doses, track side effects and look for early evidence of effectiveness. *Phase II trials* closely evaluate the effectiveness of the drug in patients with a particular disease or condition and determine the common side effects and risks. *Phase III trials* are expanded studies that gather additional information on a drug’s overall benefits and risks. Following a successful Phase III trial, a drug company may apply to the Food and Drug Administration to market a drug.

Source: Yale Office of Cooperative Research

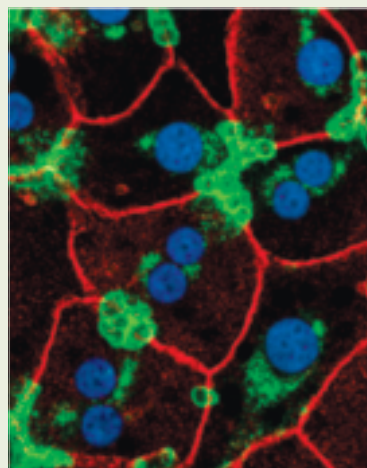
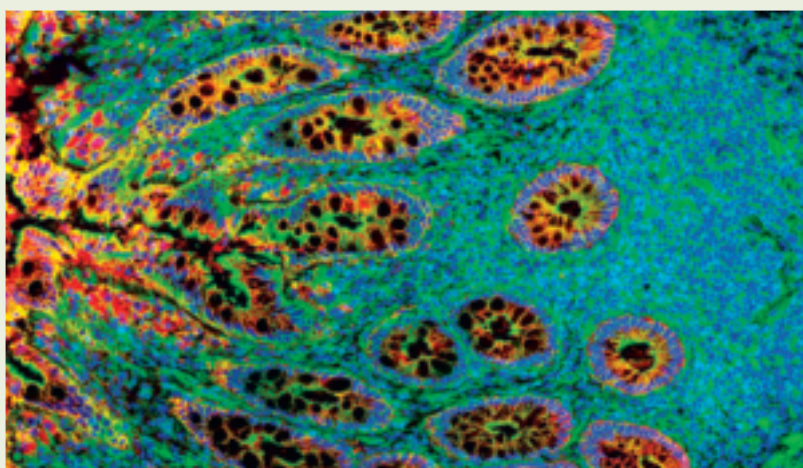


# An eye for science

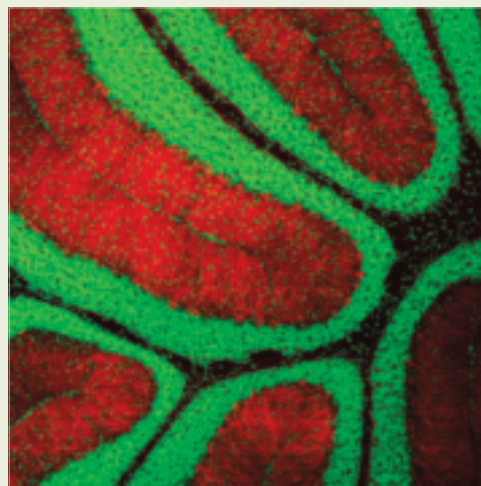
The TAC Gallery, located in the School of Medicine's Anlyan Center, showcases scientific images created in medical school laboratories. Co-directed by Lorraine F. Roseman, operations manager and customer advocate in the medical school's Office of Facilities, and Terry Dagradi, image specialist in the ITS-Med Media Group, the gallery was made possible by the Facilities Operations group. We will feature additional images from the gallery in this space in future issues.



Two images made by Cécile M. Chalouni, Ph.D., associate research scientist in the laboratory of Ira Mellman, Ph.D., Sterling Professor of Cell Biology. Left: Confocal micrograph of a mature *in vitro*-derived human dendritic cell, a professional antigen-presenting cell of the immune system, made in collaboration with Jean Davoust, Ph.D., of G n thon, Evry, France. This cell, derived from blood CD11c progenitor, is labeled for the antigen-presentation molecule HLA-DR (dark blue), which is strongly expressed on its cell surface. Below: Confocal image of a section of human colon labeled to visualize actin filaments (green) and the adhesion molecule A33 (red) located on the basolateral membranes of the colon epithelial cells. Cell nuclei are labeled by the TO-PRO-3 dye (blue).



Indirect immunofluorescence on polarized rat hepatocytes cultured in a sandwich of collagen gel by Wei Wang, Ph.D., associate research scientist in the Department of Medicine and imaged on a confocal microscope by Carol J. Soroka, Ph.D., research scientist in the Department of Medicine. The apical bile canalicular membrane is seen in green, the basolateral membrane in red and cell nuclei in blue. Both Wang and Soroka are affiliated with the Yale Liver Center.



A section of mouse cerebellum imaged with laser scanning microscopy by Valeswara-Rao Gazula, Ph.D., associate research scientist in the Department of Pharmacology, and Sudhakar Ravuri, Ph.D., of the medical school's W. M. Keck Foundation Biotechnology Resource Laboratory. Receptors for the neurotransmitter acetylcholine in the cerebellum's Purkinje cells are seen as red and DNA is labeled green.

## Grants and contracts awarded to Yale School of Medicine

### January/February 2006

#### Federal

**Meenakshi Alreja**, NIH, *Cholinergic and GABAergic Mechanisms in the Septohippocampal Pathway*, 5 years, \$1,545,940 • **Peter Cresswell**, NIH, *Role of Endocytosis in Cell Recognition*, 5 years, \$2,043,750 • **Sankar Ghosh**, NIH, *Mechanism of T Cell-Receptor Mediated Activation of NFκB*, 5 years, \$2,043,750 • **Tibor Hajszan**, NIH, *Antidepressant Effect on Hippocampal Synaptogenesis*, 3 years, \$850,966 • **Nathan Hansen**, NIH, *Intervention for HIV+ Adults With Childhood Sexual Abuse*, 4 years, \$899,966 • **Ralph Hoffman**, NIH, *rTMS Clinical Trial for Auditory Hallucinations*, 5 years, \$2,135,810 • **Akiko Iwasaki**, NIH, *Viral Recognition by Plasmacytoid Dendritic Cell*, 4 years, \$2,043,750 • **Jeffrey Kahn**, NIH, *The Role of a Novel Coronavirus in Kawasaki Disease*, 2 years, \$437,795 • **Robert LaMotte**, NIH, *Satellite Glia and Sensory Coding: Implications for Pain*, 1 year, \$404,663 • **Peter Novick**, NIH, *Structure and Inheritance of the Endoplasmic Reticulum*, 3 years, \$1,209,900 • **Jordan Pober**, NIH, *Allometry to Progenitor Cell-Derived Human Vascular Cells*, 4 years, \$2,993,312 • **Pasko Rakic**, NIH, *Apoptosis and Renewal of Neural Progenitor Cells*, 5 years, \$1,636,221 • **David Rimm**, NIH, *Predicting Metastasis in Melanoma*, 3 years, \$1,044,764 • **Scott Rivkees**, NIH, *Anti-Adenosine Therapy of Neonatal Brain Injury*, 1 year, \$183,938 • **Craig Roy**, NIH, *Evasion of Antigen Presentation by Vacuolar Pathogens*, 5 years, \$2,043,750; NIH, *Modulation of Host Cell Functions by Coxiella burnetii*, 4 years, \$1,839,375 • **Kerry Russell**, NIH, *Cardiovascular Effects of Endothelial-Derived Neuregulin*,

4 years, \$2,037,464 • **Mark Shlomchik**, NIH, *Differential GVHD Induction by Naive and Memory T Cells*, 4 years, \$1,635,000 • **Mark Solomon**, NIH, *Anaphase Promoting Complex-Mediated Proteolysis*, 3 years, \$1,406,100 • **Stephen Strittmatter**, NIH, *Nogo Receptor Antagonist for Ischemic Stroke Recovery*, 5 years, \$1,430,625 • **Scott Strobel**, NIH, *Mechanism of Ribosome-Catalyzed Peptide Bond Formation*, 3 years, \$1,322,074 • **Joann Sweasy**, NIH, *DNA Polymerase β and Colon Cancer*, 2 years, \$341,715

#### Non-Federal

**Serap Aksoy**, Ambrose Monell Foundation, *New Strategies for African Trypanosomiasis Control*, 1 year, \$100,000 • **Jeffrey Bender**, Pfizer, Inc., *Atorvastatin's Impact on Vascular Wall Inflammation by Interfering with Isoprenylation and RAC-1 Function*, 16 months, \$64,690 • **Elizabeth Bradley**, William J. Clinton Foundation, *Ethiopia Hospital Management Initiative*, 1 year, \$604,610 • **Margaret Briggs-Gowan**, University of Illinois, Chicago, *Observational Measurement of Preschool Behavior Problems*, 7 months, \$18,842 • **Susan Busch**, Robert Wood Johnson Foundation, *The Effect of State Parity Laws on Children*, 1 year, \$64,872 • **Jan Czyzyk**, American Cancer Society, Inc., *Alternative Effectors of Ras GTPase in T Cell Activation*, 4 years, \$720,000 • **Maria Diuk-Wasser**, G. Harold and Leila Y. Mathers Charitable Foundation, *Development of an Interactive Internet Site for Lyme Disease Education*, 1 year, \$51,425 • **Barbara Ehrlich**, PKD Foundation for Research in Polycystic Kidney Disease, *Molecular Coupling Between the InsP3 Receptor and*

*Polycystin 2: InsP3 Receptor Isoform Specificity for Cyst Formation*, 1 year, \$65,000 • **Gerald Friedland**, Doris Duke Charitable Foundation, *Supplement Provision of HIV Care, Antiretroviral Therapy and Prevention Through a Community-Based Program in Rural South Africa*, 1 year, \$25,000 • **Alan Garen**, Breast Cancer Alliance, Inc., *Breast Cancer Immunotherapy Using Targeted Nanoparticles Encoding an Icon*, 1 year, \$100,000 • **Walter Gilliam**, Community Foundation for Greater New Haven, *Mother Read/Father Read Evaluation*, 1 year, \$87,000 • **Nora Groce**, International Labor Organization, *The Impact of HIV/AIDS on Disabled Populations: Policy Interventions*, 5 months, \$30,000 • **Handan Gunduz-Bruce**, National Alliance for Research on Schizophrenia and Depression, *GABA-Glutamate Interactions and Psychosis*, 2 years, \$60,000 • **Melinda Irwin**, Fred Hutchinson Cancer Research Center, *TREC Coordination Center*, 1 year, \$22,346 • **Kathleen Koenig**, Organization for Autism Research, *Development of an Instrument for Measuring Change in Social Behavior in Children with Autism Spectrum Conditions: The Social Behavior Observation Measure*, 2 years, \$29,784 • **James Leckman**, New York Medical College, *Role of Group A Streptococcal Infection and HLA Type in TS and OCD*, 1 year, \$8,548 • **Guoyong Li**, American Heart Association, *Characterization of a Novel Monoamine Oxidase, Renalase*, 3 years, \$260,000 • **Xingguang Luo**, Alcoholic Beverage Medical Research Foundation, *Fine-Mapping Risk Alleles for Alcohol Dependence at the CHRM2 Locus*, 1 year, \$50,000 • **Linda Mayes**, Patrick & Catherine Weldon Donaghue Medical Research Foundation, *Minding the Baby: Home Visiting for Young Parents*, 3 years,

\$79,636 • **Guillermo Mor**, Laboratory Corporation of America Holdings, *Ovarian Cancer Support*, 3 years, \$150,000; Novogen Limited, *Assay of Induction of Apoptosis by Phenoxodiol in Cancer Cells*, 1 year, \$89,920 • **Utpal Pal**, American Heart Association, *Molecular Pathogenesis of Lyme Carditis*, 6 months, \$260,000 • **A. David Paltiel**, Massachusetts General Hospital, *Optimizing HIV Care in Less-Developed Countries*, 3 years, \$14,668 • **Reuven Rabinovici**, Cellphire, Inc., *The Efficacy of Freeze-Dried Platelets in a Rat Model of Uncontrolled Hemorrhagic Shock*, 1 year, \$125,000 • **Robert Roth**, Organon Laboratories Ltd., *Influence of Ase-napine on Dopamine and Serotonin Turnover in the Phencyclidine Model of Frontal Cortical Dysfunction in Non-Human Primates*, 2 years, \$68,670 • **David Rothstein**, University of California-San Diego, *Endotoxin and Allergy: Modulation by CTLA4*, 17 months, \$8,226 • **Joseph Schlessinger**, Ludwig Institute for Cancer Research, *Coupling Between FGF and Signaling via TGF Receptors*, 1 year, \$75,000 • **Robert Schultz**, Vanderbilt University, *Perpetual Expertise Network: Dynamics of Object Perception*, 1 year, \$46,325 • **Hong Wang**, Harvard University, *Social Experimental Study on RMHC Community-Based Health Insurance in Rural China*, 3 years, \$86,237 • **Carol Weitzman**, The Children's Fund of Connecticut, *Behavioral Health of Young Children in Primary Care Settings*, 2 years, \$178,561 • **Dagan Wells**, ART Institute of New York and New Jersey, *Analysis of Cell-Cycle Checkpoints in Human Oocytes*, 15 months, \$16,792 • **Herbert Yu**, American Association for Cancer Research, *Methylator Phenotype of Insulin-Like Growth Factors in Breast Cancer*, 2 years, \$160,000



## Awards & honors



**Myron Genel, M.D.**, professor emeritus of pediatrics, has been appointed by Mike Leavitt, Secretary of the U.S. Department of Health and

Human Services, to the Secretary's Advisory Committee on Human Research Protections. The committee provides recommendations for the responsible conduct of research involving human subjects. Genel served for 19 years as associate dean and director of the School of Medicine's office of government and community affairs. He is a former chair of the Association of American Medical Colleges' Council of Academic Societies and the Council on Scientific Affairs of the American Medical Association.



**Aaron W. McGee, Ph.D.**, postdoctoral fellow in the Department of Neurology, has received a Career Award in the Biomedical Sciences from the Bur-

roughs Wellcome Fund for his work on neural plasticity in the laboratory of Stephen M. Strittmatter, M.D., Ph.D., the Vincent Coates Professor of Neurology. The awards, established in honor of Gertrude B. Elion and George H. Hitchings, provide \$500,000 in "bridging support," distributed over five years, to sustain the research projects of senior postdoctoral fellows as they move into junior faculty positions.



**Geralyn Spollett, M.S.N., A.N.P., C.D.E.**, nurse practitioner in the Section of Endocrinology and Metabolism, was named Diabetes Educator of the

Year at the 2006 annual meeting of the American Diabetes Association (ADA). Spollett has conducted research on type 2 diabetes in black women, and has lectured nationally and internationally on diabetes management from a nurse practitioner perspective. She is on the board of directors of the ADA, and of the American Association of Diabetes Educators, where she served as chair of the National Certification Board for Diabetes Educators.



**Hongyu Zhao, Ph.D.**, Ira V. Hiscock Associate Professor in the Division of Biostatistics at the Department of Epidemiology and Public Health, has

been elected a fellow of the American Statistical Association (ASA), a scientific and educational society established to promote excellence in the application of statistics. Each year, no more than one third of 1 percent of ASA's members are named fellows. Zhao's research interests are developing mathematical, statistical and numerical methods to address scientific questions raised in molecular biology and genetics.

# Pioneer of antiviral therapies is awarded the Parker Medal, school's highest honor

*Anti-HIV/AIDS compound discovered by awardee has improved lives worldwide*

The Peter Parker Medal, the School of Medicine's premier award, is named for an intrepid alumnus and graduate of the Yale Divinity School who traveled to China in 1834 as a medical missionary. By founding the Ophthalmic Hospital at Canton, the Reverend Peter Parker, M.D., set the stage for the extraordinarily close and wide-ranging ties between Yale and China that endure to the present day.

The 2006 recipient of the Peter Parker Medal, William H. Prusoff, Ph.D., spent his working life at the lab bench instead of the bedside, but his contributions, like Parker's, have had a lasting global impact.

In the 1950s, Prusoff, now professor emeritus and senior research scientist in the Department of Pharmacology, synthesized the first antiviral compound approved for human use by the Food and Drug Administration (FDA).

But he is best known for research conducted during the 1980s with his late colleague Tai-Shun Lin, Ph.D., on d4T, a potent treatment for HIV/AIDS. Under the trade name Zerit, d4T forms part of the three-drug "cocktail" that has extended the lives of tens of thousands of people with HIV/AIDS worldwide.

**Belitsky** *continued from page 1*

After joining the School of Medicine faculty, Belitsky rose quickly through the ranks, serving at various times as unit chief and director of inpatient services at the Connecticut Mental Health Center; as medical director of the Yale Psychiatric Institute; and as director of residency education and of medical studies in psychiatry. He has been deputy chair of the psychiatry department since 2001, where he has been deeply involved in teaching both medical students and residents.

**Gifts** *continued from page 1*

According to David Wallace, a 1948 graduate of Yale's Faculty of Engineering, the couple's gifts to the medical school are driven by gratitude for the medical progress they have witnessed in their lifetimes coupled with a recognition that continuing such advances will require substantial funding.

"To have medical progress, you have to feed it money. It's the nature of the beast. Running labs, doing surveys, it's all expensive," Wallace says. "But I think we're at a point in medicine where we're making leaps and bounds. In 1900 the life expectancy was about 50 years, but I had a friend die recently at 115! The quality of life has been improved by progress



**William Prusoff (left), a trailblazer in pharmacology, receives the Peter Parker Medal from Dean Robert Alpern.**

In a landmark decision in 2001, Bristol Myers Squibb, which developed and markets Zerit, agreed to distribute the drug at no profit to HIV/AIDS patients in the hard-hit countries of sub-Saharan Africa. Royalties to Yale from sales of Zerit in developed countries provided the lion's share of funding for the construction of the Anlyan Center for Medical Research and Education, which houses state-of-the-art laboratories and classrooms at the School of Medicine.

Prusoff joined the medical school faculty in 1953. He received his undergraduate degree in chemistry from the University of Miami, his doctorate

from Columbia University and an honorary doctorate from the University of Cagliari in Italy in 1989.

In 2000 the School of Medicine established the William H. Prusoff Professorship in Pharmacology in Prusoff's honor, a post now held by the Chair of the Department of Pharmacology, Joseph Schlessinger, Ph.D.

Prusoff "exemplifies the Yale researcher," said Dean and Ensign Professor Robert J. Alpern, M.D., at an April ceremony and celebration at New Haven's Union League Café marking the award of the Parker Medal. "I am proud and thankful for Dr. Prusoff's ambassadorship on behalf of this institution."

He has served on numerous committees including the Medical School Admissions Committee, the Educational Policy and Curriculum Committee, the Graduate Medical Education Committee and the Physician Associate Program Curriculum Committee. He also chairs the Committee on Physician Health at Yale-New Haven Hospital.

His teaching awards include the Charles W. Bohmfalk Teaching Prize in 2002, the Francis Gilman Blake Award in 1998 and again in 2000,

induction into the medical school's Society of Distinguished Teachers in 2002 and the Irma Bland Award for Excellence in Teaching Residents from the American Psychiatric Association in 2005. The School of Medicine's Class of 2000 chose Belitsky as its Commencement speaker.

Belitsky, who took office on July 1, succeeds Professor of Medicine Herbert S. Chase Jr., M.D., who announced last December that he would be stepping down at the end of the academic year.

in medicine, and the length of life has been extended."

Wallace resided in Branford College during his undergraduate career at Yale, which was interrupted by World War II. He served as an officer in the 1st Infantry Division and was awarded the Purple Heart.

After the German surrender, Wallace remained in Germany, where his division oversaw the infrastructure and security for the Nuremberg war crimes trials. He returned to Yale to complete an engineering degree, but soon decided to strike out in another direction. "The one thing I learned in engineering school is that I was not going to be a good engineer, so I went to Harvard Law School," Wallace says.

Taking a job in New York at the firm of White & Case after graduation "for the magnificent sum of \$3,600 a year," Wallace so impressed his client Robert R. Young, the chairman of Allegheny Corporation, that Young asked him to join his company as general counsel.

From there, Wallace went on to work as a corporate manager at a succession of companies, including United Brands (now Chiquita Banana), Piper Aircraft, Bangor-Punta and Todd Shipyards.

But when he surveys a lifetime of memories, Wallace says that boardrooms never compete with Branford. "Yale was the greatest thing I ever did," Wallace says. "I loved Yale."